

7. HABITAT PREFERENCE OF INDIAN BUSH RAT, *GOLUNDA ELLIOTI* GUJERATI IN THE ARAVALLI MONTANE ECOSYSTEM

The Indian bush rat, *Golunda ellioti* is spread from the Peninsula to Punjab and northwestern Assam in India, Sri Lanka and Pakistan. Very little is, however, known about the bush rat. During our studies on the community ecology of small mammals in the Aravalli ecosystem—a DST-INSA sponsored project—bush rats were collected along with 13 more sympatric species from the Abu hill and in association with 11 species on the main Aravalli range extending from Abu Road to Beawar in Rajasthan during 1993-1995. Both these hilly tracts are separated by an 11km wide valley through which the western Banas river flows. Trapping procedures and ecology of the Aravallis have been reported earlier (Prakash *et al.* 1995).

The Indian bush rat is small (head and body 120 mm, tail 90-103 mm, body weight 47-60 g), essentially inhabiting forests and scrublands (Blanford, 1888-91). It is a slow moving rodent, and follows distinct pathways or runways amidst bushes and hedges. Being diurnal its movements can easily be observed.

Habitat Preference: Contrary to Blanford (*loc. cit.*) the bush rat was trapped by us from five habitats out of a total of seven. It did not occur in thickly vegetated rocky region and the hill-top grassland. Irrespective of the altitude of Abu hill, it preferred two habitats: crop field (37.4%) and runnel (35.3%), the scrubland being its next preferred habitat (18.2%). The river bank and sparsely vegetated rocky habitats were found to be inhabited by 5.0% and 4.0% bush rats respectively. On the low hills of the main Aravalli range, the golunds were collected only from three localities and three habitats out of 5 localities and 5 habitats. Their most preferred habitat was rocky terrain with sparse vegetation cover (44.4%) and crop field (33.3%). Scrubland supported only 22.2% golunds.

Altitudinal Preference: The frequency of occurrence of bush rats in two major montane zones

varied considerably:

	Abu Hill %	Aravalli Range %
Foothills	39.39	66.67
500-600m	00.00	11.11
1000-1100m	14.14	22.22
1500-1600m	46.46	Altitude not present

The maximum number of bush rats were trapped at the highest altitude on Abu hill, but on the main Aravalli range their preferred altitude was the foothills. In the Abu hills, crop fields were the most preferred by these rodents but on the Aravalli range they were most abundant in rocky habitat with sparse vegetation cover. The Cheppaberi locality, situated on Abu hills at 500 m elevation did not harbour *G. ellioti*. In the Abu hills their preponderance at 1500-1600 m altitude was maximum in the runnel (52.2% of total collection from that elevation) followed by crop field (45.7%). Likewise in the foothills the bush rats were relatively more abundant on the river bank. Their predominance in the runnel and river bank may be due to a higher soil moisture regime which sustains green vegetation, especially *Cynodon dactylon*, all the year round on which they feed.

Relative Abundance and Conspecifics: The Abu hill is a wildlife sanctuary and is well vegetated; though illegal grazing continues yet it is relatively less disturbed as compared to the main Aravalli range. Being low in altitude, the main range of the Aravallis receive poor monsoon precipitation, resulting in a lower floral diversity; besides the whole terrain has been encroached by *Lantana camara*, the thickets of which provide shelter to *Golunda ellioti*. Because of the spinous stems of lantana, the mongoose, *Herpestes edwardsii*, which is fairly common, is probably unable to predate upon the rodent. These may be plausible reasons for their greater density over the Abu hill compared to that on the Aravalli range.

Out of the 14 species of small mammals collected from Abu hill, the relative number index of bush rats was third, first and second being *Cremonomys cutchicus* (rock rat) and *Suncus murinus sindensis* (house shrew). On the main Aravalli range, however, its relative index number was fifth. *C. cutchicus*, *S. murinus*, *Tatera indica* and *Millardia meltada* were found to be more abundant. At 500-600 m and 1000-1100 m altitude, *Mus phillipsi*, *M. platythrix* and *M. saxicola* were the major conspecific small mammals. *Bandicota bengalensis* has also ascended the hills in small numbers and coexist mainly in crop fields.

Breeding Season: Pregnant female bush rats were collected from February to November. Litter size varied from 4 to 11 (ave. 7.3).

In conclusion the Indian bush rat, *Golunda ellioti gujerati* appears to be a very successful species which has a wide distribution in India, Sri Lanka and Pakistan. The genus *Golunda* is considered to be among the older faunas, differentiated in the Peninsular land mass and it is surmised that it was distributed from Peninsula to Aravallis even before Himalayan uplift. Ryley (1913) had found it common at Mt. Abu but at present it is very abundant on the Abu hill. Apparently, the northward migration of *Golunda ellioti* is continuing. On the Abu hill it is one of the most abundant small mammals out of 14 species collected by us. On the Aravalli range, density is lower as conjecturally it is still encroaching over the denuded hilly terrain. The northwesterly migration theory on the bush rat is further confirmed from our ecological studies on desert rodents. This rodent was not collected in the mammal survey of the Thar Desert undertaken during 1952-54 (Prakash 1955, 1962). However, 20 years later during our ecological survey of the rodents of the Thar desert (Prakash *et al.* 1971) undertaken during 1969-70, *Golunda ellioti* were collected from Sirohi and Pali districts bordering the Aravalli range. Apparently they had ventured in this region in recent years. Further west, Taber *et al.* (1967) did not collect it from Lyallpur region and Roberts (1977) reported it from the rice fields in the coastal

regions of lower Sind and remarked that it has a restricted occurrence in Pakistan.

One of the major reasons for the northward invasion by *Golunda ellioti* is the creation of conducive environmental conditions through the expansion of irrigated agriculture throughout northern India especially in Gujarat and parts of the Thar Desert. In the Rajasthan desert the irrigated cropping area has almost doubled during the last two decades due to overexploitation of ground water and the advent of the Indira Gandhi Canal and its tributaries. Irrigation changes the sub-soil moisture regime which then sustains weeds and green shrubs all the year round. The longer availability of green food adds to the nutritive intake of food by animals and reproductive potential enhances. The bush rat, delivers 5 to 10 young (average litter size 6.6) in the Rajasthan desert (Prakash, 1971) whereas its range on the Aravallis increases from 4 to 11 (average 7.3). Thus the species is not able to advance its recruitment potential in the more favourable ecological conditions but probably its survival and longevity has also become superior.

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8. THE MALABAR SPINY DORMOUSE (*PLATACANTHOMYS LASIURUS*) IN THE KALAKAD MUNDANTHURAI TIGER RESERVE, TAMIL NADU

The spiny dormouse is a small, beautiful rodent, smaller than the house rat but with a very characteristic bushy tail tip. Also called the pepper rat, it is endemic to the Western Ghats; found mostly in the southern Western Ghats but can occur as far north as Shimoga (Rajagopalan, 1968). It is the only representative of the genus in India (Jerdon, 1874). This rodent has not been recorded from the Kakachi areas of KMTR but occurs at a lower elevation at Bonakadu in the same reserve (Webb-Peploe, 1947) and is probably common in higher forest even elsewhere in the reserve.

Being a nocturnal arboreal animal, it was very rarely seen by us during the day, due to its versatile ability to climb any twiners and branches with minimum disturbance and maximum speed. Evidence of this animal was first noticed during my studies on seed predation in Kakachi when many fruits and seeds were seen removed overnight. Prolonged nocturnal

observations on seed and fruit piles gave the first sighting of the dormouse.

The animal appears to be abundant in the area, judging by the fruit removal from many trees within a few acres. There is no other nocturnal rodent with this uncanny ability to pick seeds even from fruits twice its own size. It also has the habit of hoarding seeds, and rarely forages on the ground. Our preliminary studies indicate that such foraging behaviour of the dormouse could have significant effect on tree recruitment through seed predation.

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